



## Test Report Of ANSI/IES LM-79-19

### APPROVED METHOD FOR OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS

Report Number..... : N02A22110665L00501

Client..... : HK Lighting Group

Address..... : 2151 Anchor Ct, Thousand Oaks, CA, USA

Test Model..... : ZXL38i-M

Brand Name..... : HK Lighting Group

Testing Laboratory..... : Guangdong Meide Testing Technology Co., Ltd.

Address..... : 1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road, Songshan  
Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.

Testing Location..... : As above

Date of receipt..... : Mar. 14, 2023

Date of test ..... : Mar. 14, 2023

Date of report..... : Apr. 06, 2023

Tested by:

*Jarvis Zhang*

Jarvis Zhang/ Test Engineer

Checked by:

*Sandy Chen*

Sandy Chen/ Project Engineer

Approved by:

*Jessie Li*

Jessie Li/ Technical Manager



Note 1: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Guangdong Meide Testing Technology Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Note 2: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

## 1. Product Description for Equipment under Test(EUT)

Representative (Tested) Model:	ZXL38i-M
Manufacturer:	HK Lighting Group
Product Type:	AREA ACCENT LIGHT
Rated Voltage/Frequency:	120V AC, 60Hz
Rated Power:	52W
Rated luminous flux:	4200lm
Nominal CCT:	3000K
LED Manufacturer:	NICHIA
LED Model No.:	NICHIA 130

## 2. Standards Used

- ANSI/IES LM-79-19:APPROVED METHOD:OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS

## 3. Test equipment list

Test Equipment	Serial No.	Model No.	Calibration due date
Full-field Speed Goniophotometer	MD-E028	GO-R5000	2023/09/17
Digital Power Meter	MD-E001	PF2010	2023/09/17
AC Testing Power Source	MD-E002	DPS1060	2023/09/17
Total Spectral Radiant Flux Standard Lamp	MD-E007	D908S	2023/10/13

Statement of Traceability: Guangdong Meide Testing Technology Co., Ltd. attested that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit(SI).

## 4. Test Method

### Requirements of Ambient Condition

Product was tested with no seasoning. All stabilization and measurements were made in compliance with ANSI/IES LM-79-19. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at  $25^{\circ}\text{C}\pm 1.2^{\circ}\text{C}$  during measurement. And relative humidity between 10% and 65%.

### Goniophotometer System

The sample was tested according to the ANSI/IES LM-79-19.

Photometric paramters were measured using a type C goniophotometer and software. The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, Luminous efficacy, zonal flux were calculated from the software taken at  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  horizontal intervals. Photometric distance was more than five times of the Largest dimension of the test SSL product.

## 5. Goniophotometer Test results

### 5.1 Test Data

Test Ambient Temperature	25.2°C	Test orientation	Downward
Operate time(Min.)	90	stabilization time(Min.)	30

### Electrical Measurement

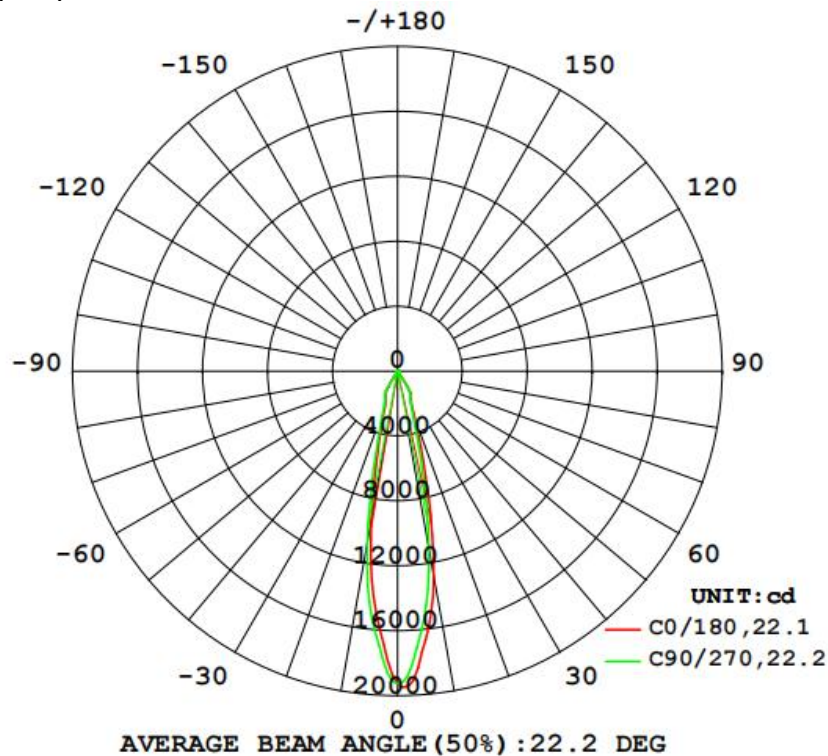
Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
120.1	60	0.4261	0.9827	50.27

### Optical Measurement

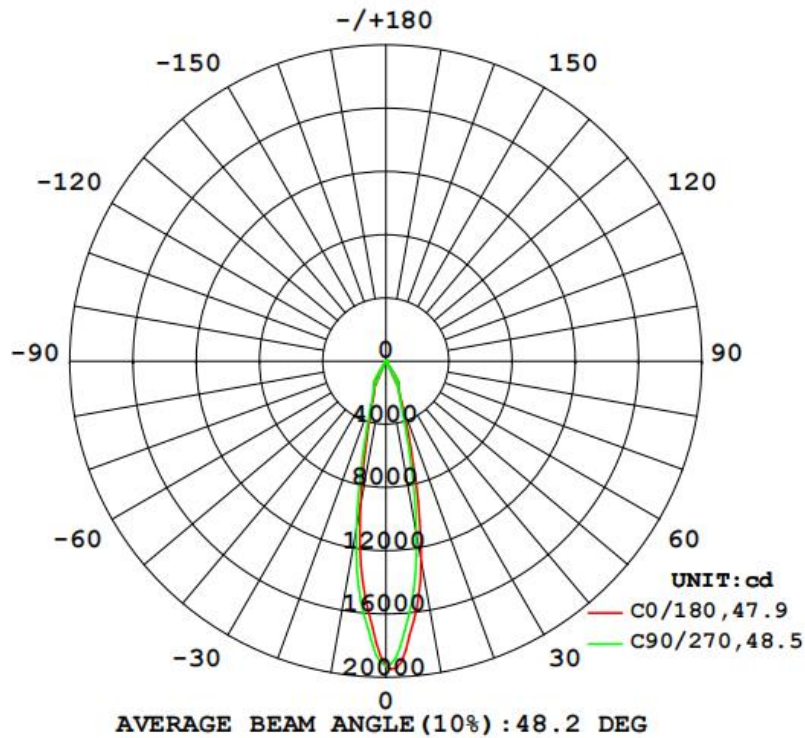
Luminous Flux (lm)	Efficacy(lm/W)	Imax (cd)	Spacing Criteria (C0/180°)	Spacing Criteria (C90/270°)
4261.94	84.79	19470	0.33	0.37

## 5.2 Luminous Intensity Distribution

### 5.2.1 Beam Angle (50%) Mode:



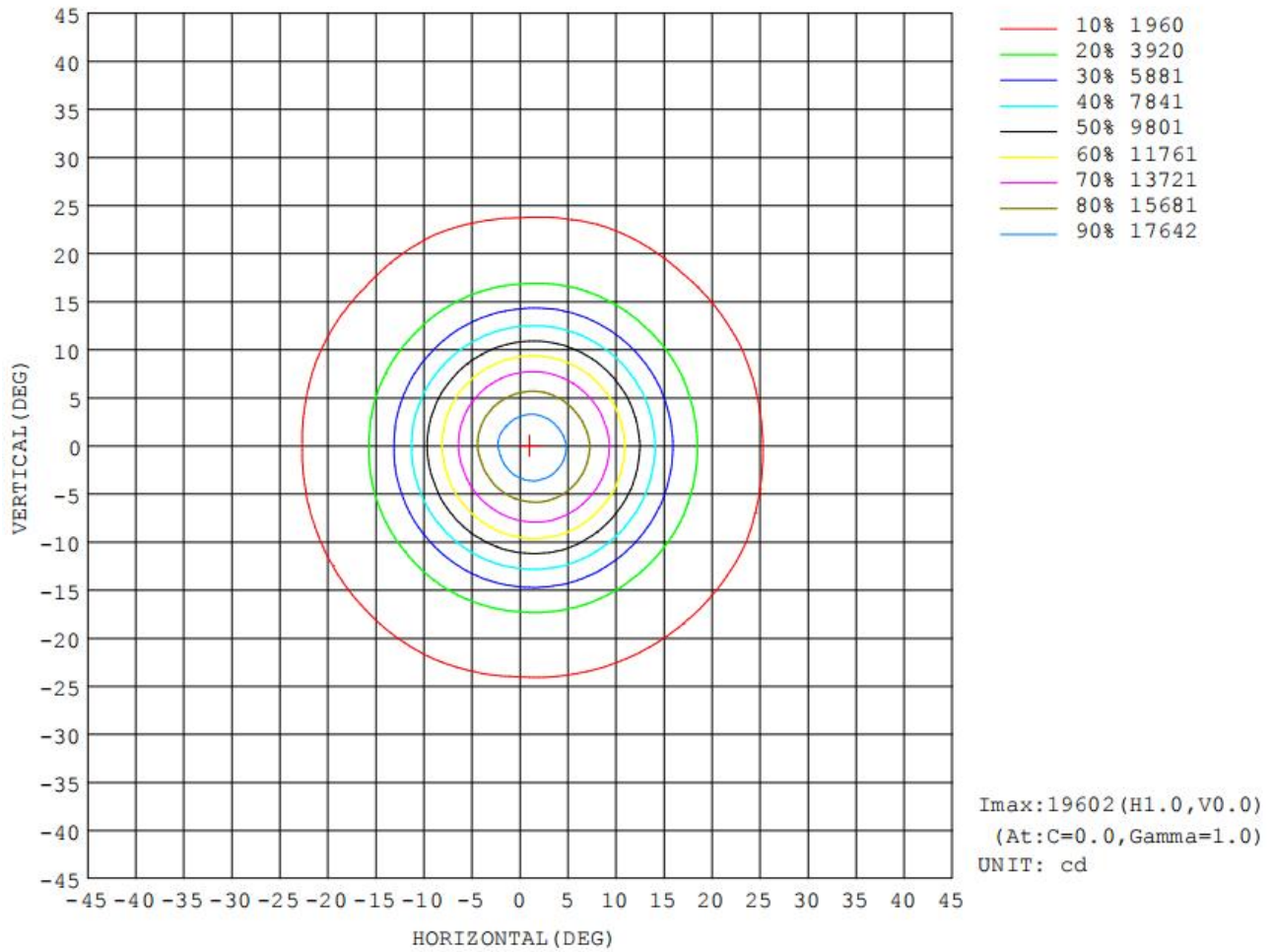
### 5.2.2 Beam Angle (10%) Mode:



### 5.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	1288	1242	1122	989.4	929.1	968.0	1079	1216	0- 10	1389	1389	32.6, 32.6
20	311.8	299.8	272.3	247.2	232.8	238.4	267.2	298.0	10- 20	1569	2958	69.4, 69.4
30	163.7	163.5	158.8	149.1	140.8	142.5	154.7	159.0	20- 30	897.9	3856	90.5, 90.5
40	8.172	8.453	7.583	7.342	7.020	6.535	7.314	8.175	30- 40	312.0	4168	97.8, 97.8
50	3.395	3.374	3.348	3.467	3.403	3.113	3.185	3.285	40- 50	37.87	4206	98.7, 98.7
60	2.145	2.116	2.129	2.132	2.069	1.976	2.011	2.129	50- 60	24.67	4231	99.3, 99.3
70	1.096	1.108	1.142	1.173	1.143	1.012	1.051	1.084	60- 70	15.20	4246	99.6, 99.6
80	0.4730	0.4247	0.3116	0.1815	0.1645	0.2034	0.3306	0.4561	70- 80	8.293	4254	99.8, 99.8
90	0.0085	0.0050	0.0033	0.0033	0.0041	0.0040	0.0042	0.0085	80- 90	0.9785	4255	99.8, 99.8
100	0.0030	0.0030	0.0031	0.0031	0.0043	0.0042	0.0042	0.0041	90-100	0.0401	4255	99.8, 99.8
110	0.0031	0.0028	0.0031	0.0030	0.0042	0.0042	0.0043	0.0039	100-110	0.0378	4255	99.8, 99.8
120	0.0072	0.0071	0.0082	0.0090	0.0088	0.0087	0.0079	0.0067	110-120	0.0442	4255	99.8, 99.8
130	0.0319	0.0319	0.0326	0.0362	0.0497	0.0473	0.0428	0.0407	120-130	0.1807	4256	99.9, 99.9
140	0.1270	0.1255	0.1316	0.1569	0.2467	0.2289	0.1896	0.1901	130-140	0.6842	4256	99.9, 99.9
150	0.2810	0.2544	0.2147	0.2813	0.6148	0.5669	0.4249	0.5006	140-150	1.776	4258	99.9, 99.9
160	0.3364	0.2967	0.2440	0.2985	0.7854	0.7823	0.6476	0.7126	150-160	2.162	4260	100, 100
170	0.2540	0.2254	0.2305	0.2452	0.5761	0.5736	0.5490	0.5961	160-170	1.344	4262	100, 100
180	0.3059	0.2944	0.3462	0.3673	0.3123	0.2954	0.3172	0.3576	170-180	0.3529	4262	100, 100
DEG	LUMINOUS INTENSITY: X10cd									UNIT: lm		

#### 5.4 Isocandela Diagram





## 5.5 Luminous Distribution Intensity Data

Table--1

UNIT: X10cd

C (DEG) γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	1928	1928	1928	1928	1928	1928	1928	1928	1928	1928	1928	1928	1928	1928	1928	1928			
5	1738	1734	1710	1673	1627	1581	1541	1516	1505	1517	1542	1574	1613	1655	1690	1720			
10	1288	1275	1242	1192	1122	1048	989	949	929	941	968	1018	1079	1151	1216	1268			
15	676	666	637	605	561	519	477	454	434	441	452	485	522	573	619	662			
20	312	312	300	289	272	261	247	239	233	237	238	256	267	285	298	308			
25	198	200	195	191	188	187	183	181	178	180	180	185	185	190	191	197			
30	164	165	164	160	159	156	149	143	141	141	143	150	155	160	159	163			
35	43.4	44.8	40.6	33.7	23.7	15.8	12.7	12.0	11.5	12.0	11.3	12.7	32.4	38.4	41.1	54.3			
40	8.17	8.73	8.45	8.18	7.58	7.27	7.34	7.19	7.02	7.09	6.53	7.01	7.31	7.96	8.18	8.15			
45	4.96	5.15	4.91	4.81	4.60	4.52	4.36	4.28	4.19	4.29	4.09	4.20	4.27	4.65	4.79	4.99			
50	3.40	3.48	3.37	3.39	3.35	3.39	3.47	3.45	3.40	3.34	3.11	3.24	3.19	3.31	3.28	3.41			
55	2.76	2.88	2.86	2.80	2.80	2.73	2.82	2.80	2.75	2.69	2.55	2.64	2.70	2.79	2.81	2.78			
60	2.15	2.17	2.12	2.10	2.13	2.12	2.13	2.11	2.07	2.07	1.98	2.01	2.01	2.11	2.13	2.15			
65	1.58	1.57	1.54	1.53	1.54	1.54	1.50	1.48	1.45	1.47	1.40	1.41	1.43	1.51	1.54	1.58			
70	1.10	1.12	1.11	1.13	1.14	1.16	1.17	1.18	1.14	1.12	1.01	1.04	1.05	1.10	1.08	1.10			
75	0.80	0.83	0.82	0.84	0.86	0.86	0.86	0.85	0.81	0.82	0.73	0.76	0.76	0.81	0.80	0.82			
80	0.47	0.48	0.42	0.40	0.31	0.27	0.18	0.18	0.16	0.20	0.20	0.29	0.33	0.43	0.46	0.51			
85	0.08	0.09	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.08	0.08	0.10			
90	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01			
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
120	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01			
125	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02			
130	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.04			
135	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.08	0.12	0.11	0.11	0.10	0.09	0.09	0.09	0.09			
140	0.13	0.13	0.13	0.13	0.13	0.15	0.16	0.16	0.25	0.24	0.23	0.20	0.19	0.18	0.19	0.19			
145	0.22	0.21	0.21	0.18	0.21	0.21	0.24	0.25	0.43	0.42	0.41	0.34	0.32	0.31	0.35	0.35			
150	0.28	0.28	0.25	0.20	0.21	0.24	0.28	0.30	0.61	0.61	0.57	0.49	0.42	0.44	0.50	0.53			
155	0.34	0.33	0.30	0.25	0.23	0.28	0.31	0.33	0.76	0.75	0.72	0.65	0.56	0.55	0.64	0.70			
160	0.34	0.32	0.30	0.26	0.24	0.26	0.30	0.31	0.79	0.78	0.78	0.72	0.65	0.64	0.71	0.78			
165	0.29	0.28	0.26	0.24	0.24	0.26	0.27	0.28	0.71	0.71	0.71	0.66	0.63	0.62	0.67	0.74			
170	0.25	0.24	0.23	0.22	0.23	0.24	0.25	0.24	0.58	0.58	0.57	0.56	0.55	0.56	0.60	0.64			
175	0.25	0.25	0.23	0.23	0.24	0.25	0.26	0.26	0.43	0.43	0.43	0.43	0.45	0.47	0.49	0.51			
180	0.31	0.30	0.29	0.32	0.35	0.36	0.37	0.35	0.31	0.31	0.30	0.29	0.32	0.34	0.36	0.36			

## 6. Photo of sample

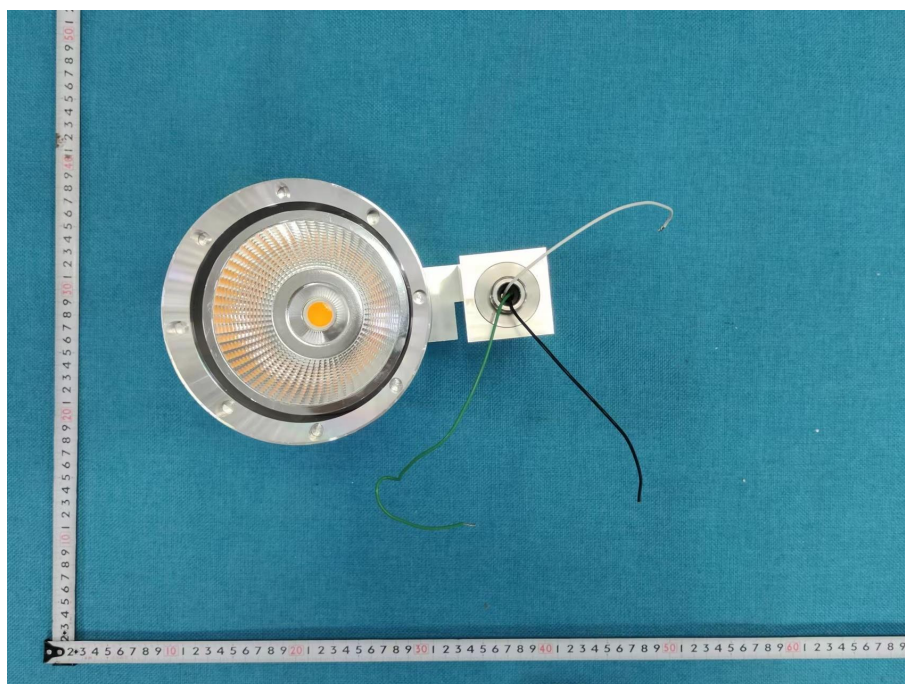


Figure 1 Overview

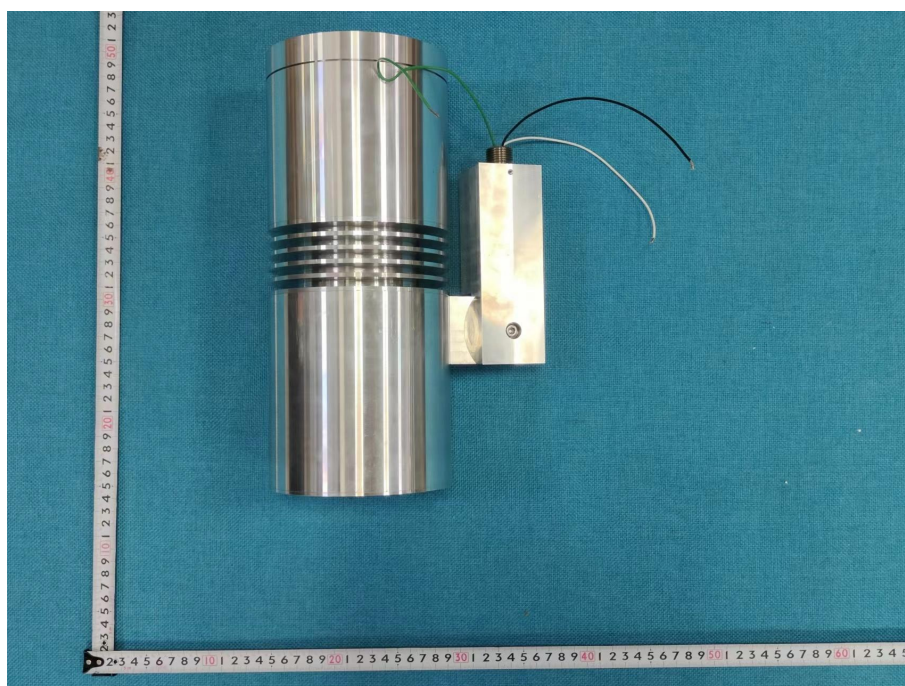


Figure 2 Overview

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